



# AudioiNSIDE

SONiVOX AudioiNSIDE™ software products serve as underlying audio rendering technologies for a wide array of mobile phones, semiconductors, toys and consumer devices that require:

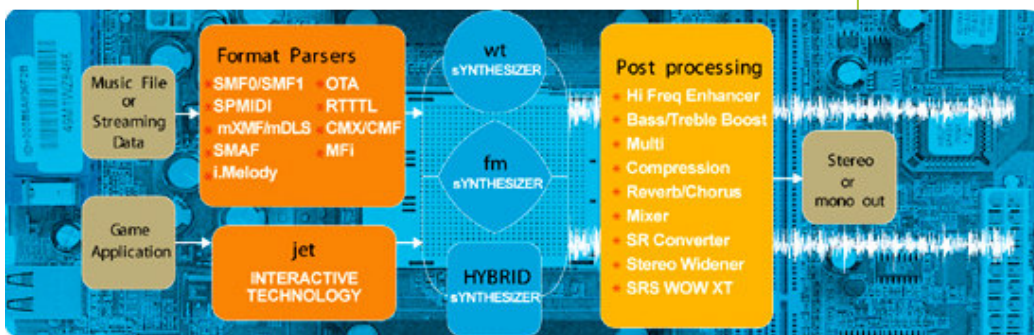
- Very low memory and MIPS footprints
- Rapid deployment on multiple chip architectures
- Contained cost structure
- Highest audio quality
- Integrated Java and game support

AudioiNSIDE technologies include:

**EAS:** embedded audio system

**JET:** interactive audio engine and middleware solution for Java applications

**EAS** was specifically written for devices requiring very low memory and MIPS footprints while maintaining high audio quality. It is a customizable software package comprised of a digital audio player, Wavetable, FM or Hybrid MIDI synthesizers, matched General MIDI sound sets, and audio extensions for multiple ringtone formats, Java API wrappers, ambience and surround sound effects, digital mixers, audio codecs, and more.



The system is designed to render digital audio content, game music and sound effects, and MIDI music content, with the lowest possible storage and operating requirements.

The solution can be scaled and delivered in sizes from under 64kbytes (including wavetable) on up.

EAS features include:

- Scalable and modular architecture
- Small memory and MIPS footprint
- Multiple customized wavetables
- MIPS limiting and system protection algorithms
- 1-day integration and full support options
- Complete integration test suite
- Wide variety of native ports

**JET** is the mobile industry's only interactive audio engine for mobile devices. Employed as an embedded solution with SONiVOX EAS, or as a middleware solution for Java J2ME games and applications, JET delivers functionality to handsets that enable console quality games and applications with cutting edge interactive audio and music content. The JET SDK provides a small footprint Java Library that enables developers to create compelling Java based mobile games with synchronized music, graphics and game play.

SONiVOX provides a three-tiered suite of premier sound products that give voice to consumers ranging from professional musicians to over 100 million cellular users worldwide. For more information: 1-617-718-0202 | [info@sonivoxrocks.com](mailto:info@sonivoxrocks.com) | [www.sonivoxrocks.com](http://www.sonivoxrocks.com)

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sound that rocks.

## TECHNICAL SPECIFICATIONS

SONiVOX's EAS MIDI solution is very scaleable. Using an identical API, the EAS technology/code base offers a range of solutions for various product families, from resource limited IC's (toy or baseband use) to high-end multi-media SoCs. This allows customers to integrate once but deploy multiple solutions as needed to support their business and objectives and platform restrictions.

**Widest Interoperability:** EAS supports more file formats than any other ringtone solution, giving device designers the ability to support the largest selection of available content.

**Support and Consulting:** SONiVOX's employees have up to 20 years experience in MIDI synthesis and wavetable design, allowing SONiVOX to provide consulting and support services to its clients. Our involvement with industry standards boards such as the MIDI Manufactures Association Working Group on Scalable Polyphony MIDI and Mobile DLS helps SONiVOX clients stay up to date with industry trends, assuring a successful multi-media solution

**Wavetable and Sound Tuning:** SONiVOX provides wavetable and sound tuning and balancing, setting us apart from our competitors. We create all our wavetables at in-house studios and this proposal includes support to MS for tuning the EAS wavetables to meet content demonstration requirements.

**Licensing:** Licensing includes software, a complete test suite, the EAS player application, documentation, demo material and support. Custom design services are also available.

**Easy Integration:** With SONiVOX's Configuration Module and Host Wrapper Interface, the SONiVOX solution can be up in 24 hours. Aiding integration are test vectors, documentation, Win32 executables, Error trapping and reporting.

**Embedded Design:** EAS is not a back-ported PC application. It has been designed from the ground up for fail-safe operation in embedded environments. With advanced features including MIPS limiting, multi-tasking and performance tuning support, SONiVOX's AudioINSIDE EAS solution has proven itself for use in critical application devices such as baseband and advanced multi-media processors. AudioINSIDE solutions have shipped in over 110M devices and can be found in Amoi, BenQ, Motorola, Pantech, RIM and Samsung phones.

# SONiVOX EAS

<b>Polyphony:</b>	256 voices (or more if desired)
<b>Formats:</b>	SMF0/SMF1 SP-MIDI mXMF/mDLS (mobile XMF/DLS) SMAF CMX (CMF) RTTTL/RTX OTA MFi Wave File (RIFF format)
<b>Synthesizer Options:</b>	Wavetable FM mDLS 2.0 Hybrid (FM + Wavetable) Split/multi-core (DSP/MCU, multiple MCUs, etc.)
<b>Sampling Rates:</b>	8,16,22,32,44 and 48 KHz
<b>Memory Requirements:</b>	FM: 15k Wavetable: start at less than 100k (code + Data) with typical 130-200k total for phone deployment.
<b>CPU Requirements:</b>	Starts at .45 MCPs/voice with 1 MCP/voice peak for typical phone deployment.
<b>Wavetables:</b>	8 or 16 bit 40kb up to 4Mb GM, Stylized (FM, techno-pop, MFi), and ethnic/regional
<b>Effects:</b>	AGC (Auto Gain Control) Compressor/Limiter Reverb Chorus Tone Control (treble/base) EQ (5-7 band) SRS WOW XT Integration Stereo Widening Q1-07 HRTF Surround Sound (3D Positional) Q1-07
<b>CODECS:</b>	Wave IMA ADPCM SMAF ADPCM MP3 AAC-LC (AAC+) Q1-07 HE-AAC Q1-07 AMR-WB Q1-07 WMA Q1-07
<b>Memory Models:</b>	Static and Dynamic models supported
<b>Other Features:</b>	JSR135 Interface Support for multiple, simultaneous streams Real time interface Metadata & Lyric support External Audio Interface LED & Vibrate



EAS fully supports Tensilica's Diamond 330HiFi audio processor and the Xtensa® HiFi 2 audio engine.

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